

# **Lots of Activity at the Rail Yard**

**Burlington Northern Livingston Shop Complex  
State Superfund Facility**

**Aimee Reynolds, Project Manager  
Montana Department of Environmental Quality**

**November 28, 2007**



# Agenda

- Information
- Update on remedial activities
  - Petroleum Recovery
  - Plume Characterization
  - Volatile Organic Solvent Remediation Testing
  - Vapor Intrusion Investigation and Mitigation
- What's next
- Not here to discuss the lawsuit



# Information

“New” Project Manager:

Aimee Reynolds – 406-841-5065 or 800-246-8198

Park County Environmental Council (PCEC) Contacts:

Jim Barrett, PCEC – 406-222-0723 or 866-829-2059

Brian Blicher, Resource Technologies, Inc. – 406-585-8005

Website:

<http://deq.mt.gov/StateSuperfund/BNLivingston.asp>

Library Repository



# Petroleum Remediation

- DEQ Work Plan
- Fall 2006 Pilot Testing
- Additional Plume Characterization
- BNSF Design and Build Phase 1
- What's Next

10/19/2006



# Fall 2006 Pilot Testing













































10/22/2006



# Kennedy/Jenks Field Office



10/22/2006












A large, rusted metal drum, likely a 55-gallon drum, is shown from a top-down perspective. The drum is filled with a dark, murky, brownish-black liquid. The liquid's surface is covered with a thick layer of dark, clumpy sludge or sediment. The drum's rim and inner walls are heavily corroded, showing a reddish-brown rust. The background is dark and indistinct.

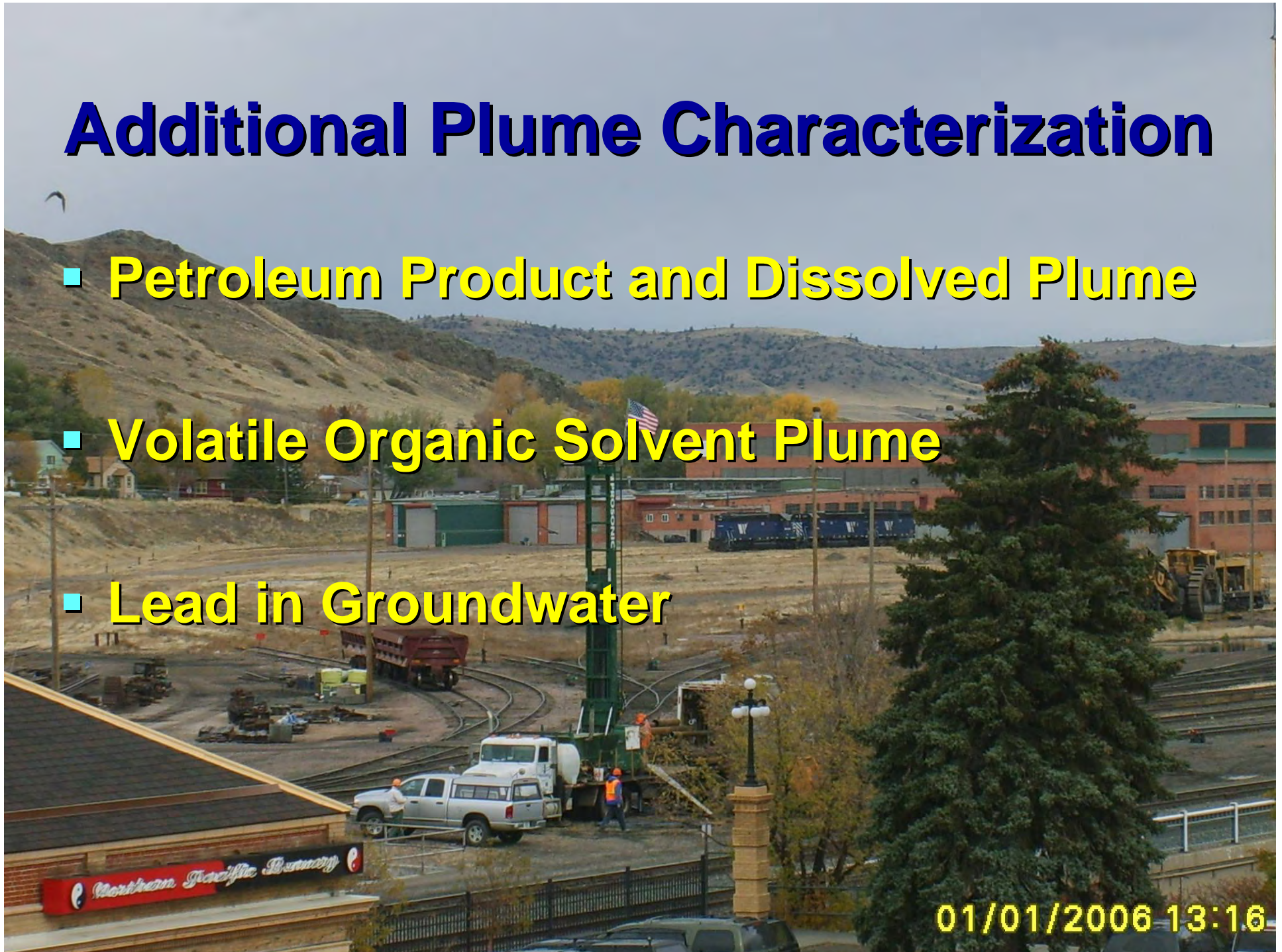
425 Gallons in 2 Months of  
Testing

10/19/2006



# Additional Plume Characterization

- Petroleum Product and Dissolved Plume
- Volatile Organic Solvent Plume
- Lead in Groundwater



01/01/2006 13:16



# Petroleum























10/21/2006





10/22/2006









10/19/2006







# **Volatile Organic Solvents and Lead**









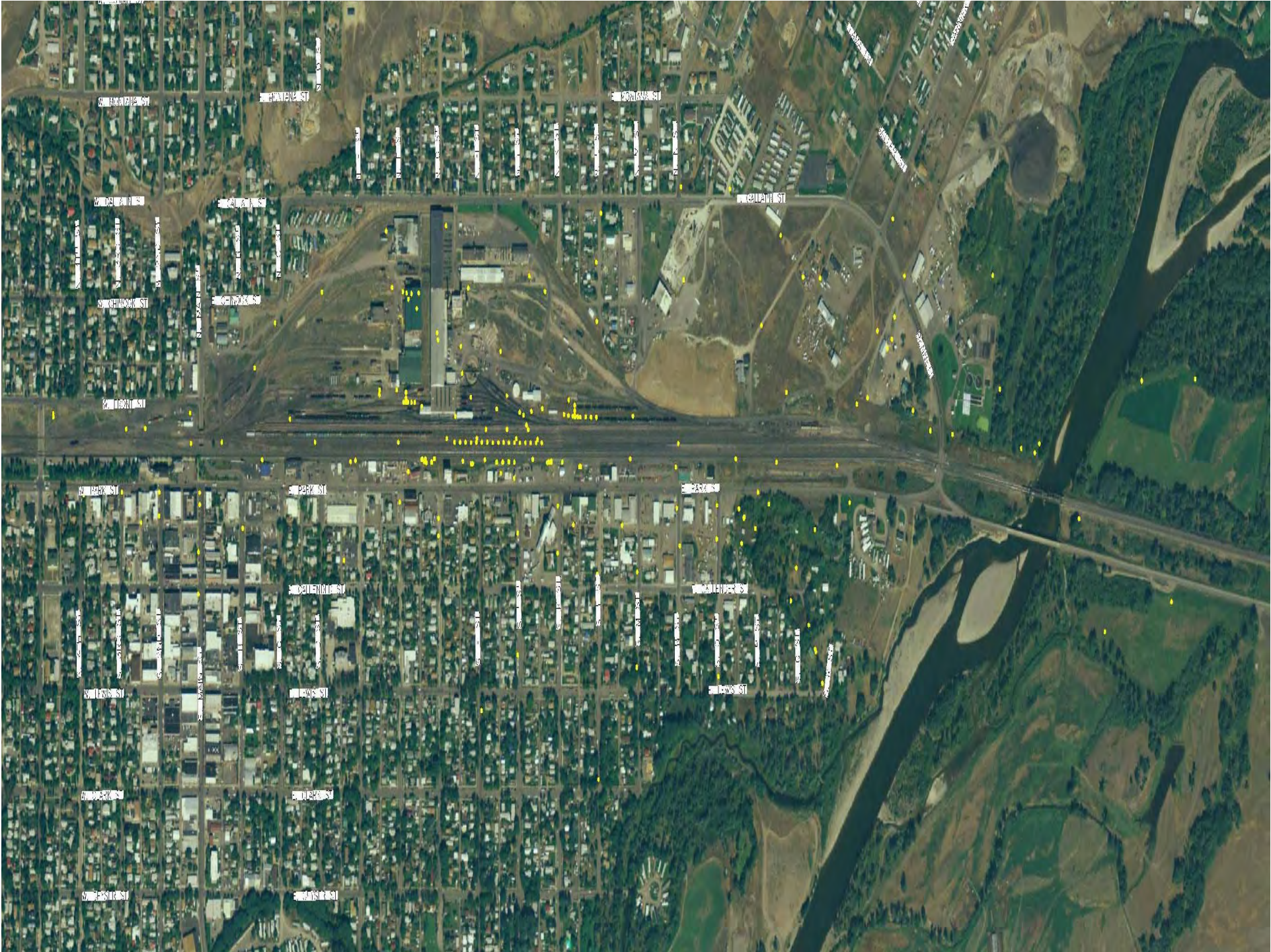


2007/06/08 11:25







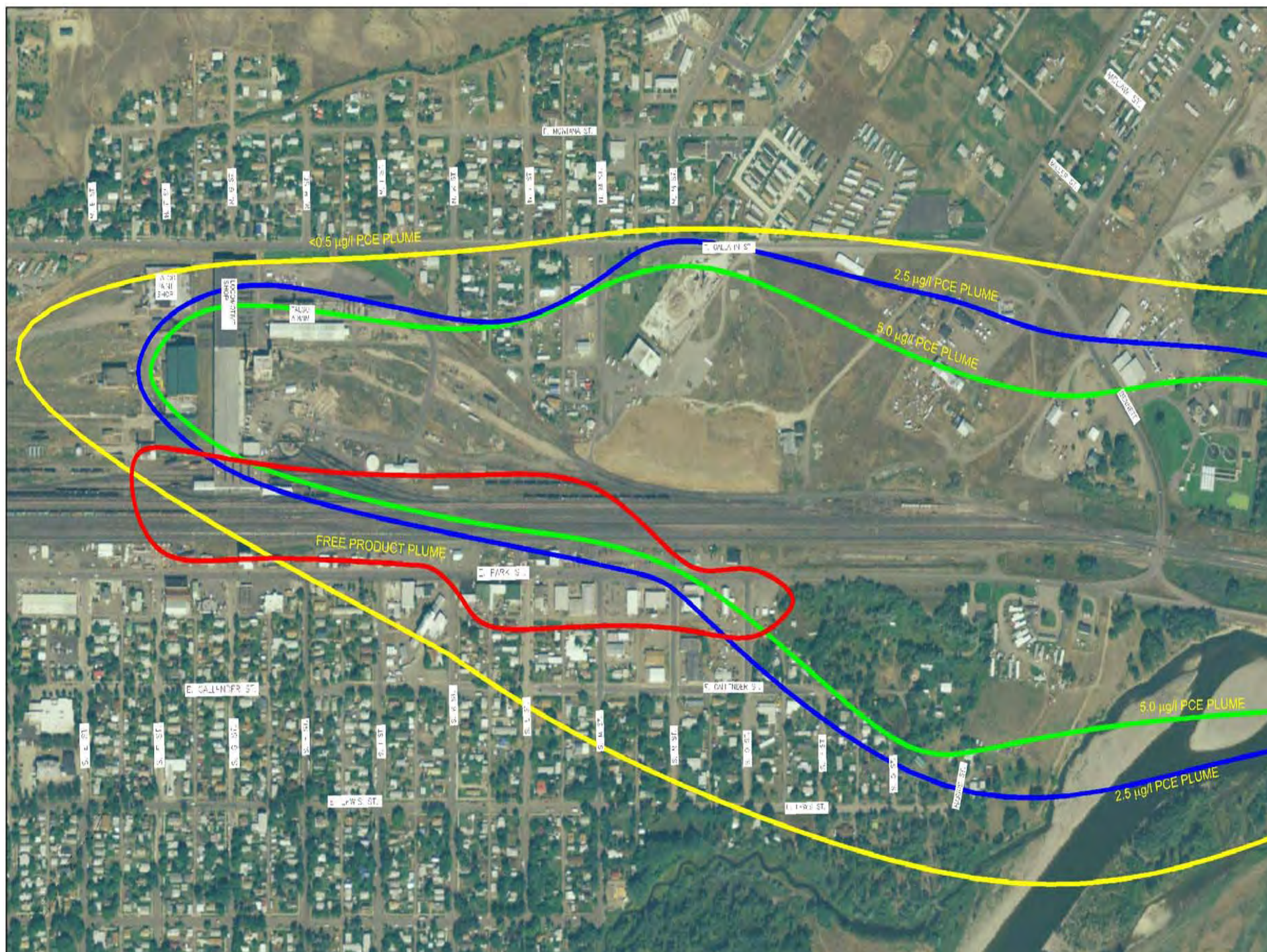




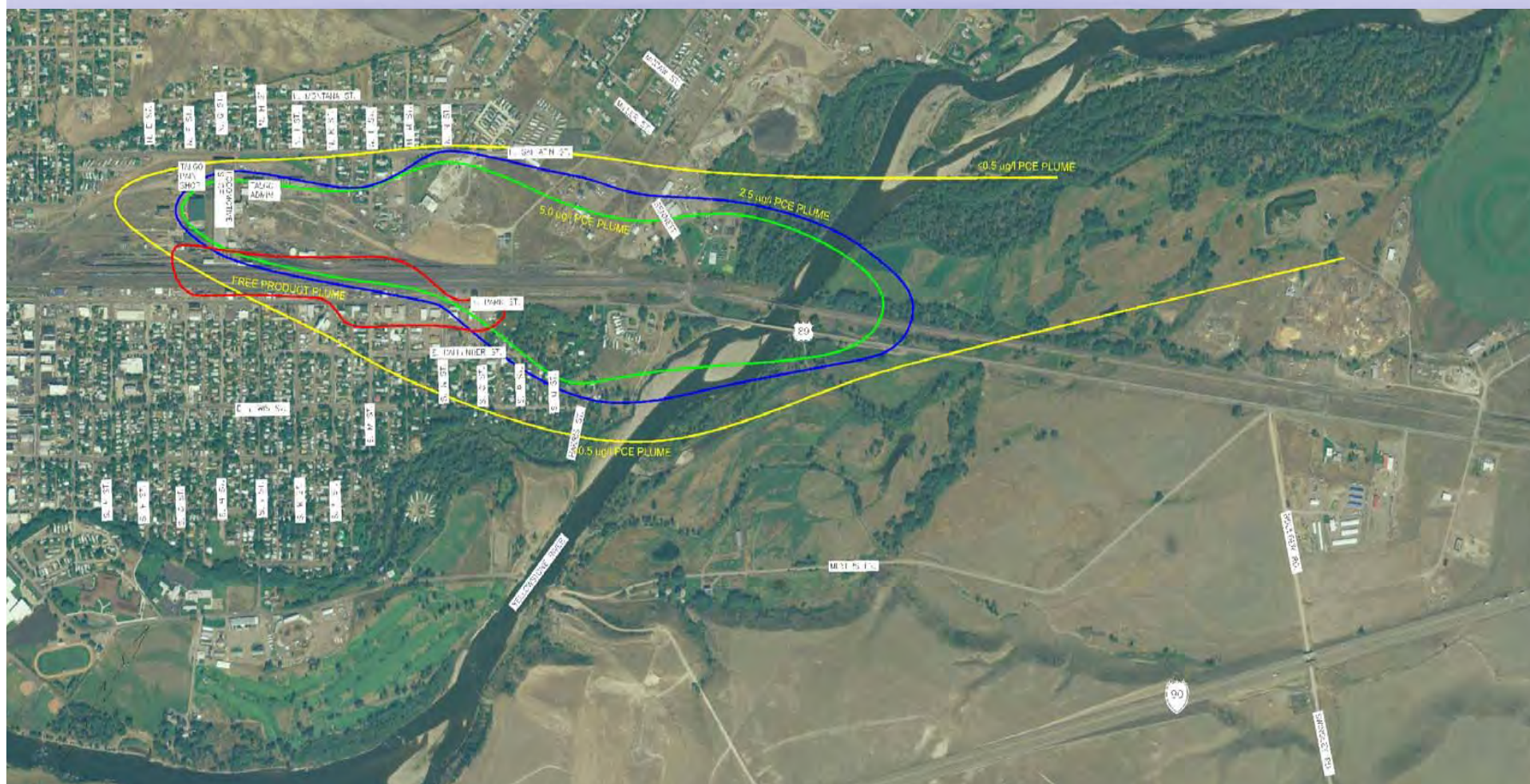
# Good News About Lead

- Very few detections
- 0.6 micrograms/liter ( $\mu\text{g/L}$ )
- Well below the standard of 15  $\mu\text{g/L}$











# Phase 1 – Petroleum Recovery and Bioventing



06/05/2007 14:16



# Utilidor

















# Wells



06/11/2007 13:35







# Well Vaults



07/19/2007 10:59









08/28/2007 08:00

1-29-07





06/14/2007 16:55



# Multi-Use Well Setup

10/24/2007 09:12

















# Piping



08/06/2007 16:46





08/15/2007 14:31



# Secondary Containment – Impermeable Coating









# Slopes to Sump



10/05/2007 11:05









11/08/2007 14:13





11/10/2007 10:19



A photograph of a construction site. In the foreground, a large, rectangular, light-colored vault is being lowered into a deep, excavated pit. A worker in an orange safety vest and plaid shirt stands next to the vault, holding a vertical wooden post. To the left, a yellow excavator is partially visible. In the background, there is a white building with a large white door and a ramp leading up to it. A blue portable toilet and a white storage container are also visible. The scene is set during the day with bright sunlight.

# Southern Vault

10/27/2007 08:07







# Jack and Bore



05/18/2007 12:33









05/18/2007 14:56





05/19/2007 14:45





06/06/2007 08:49









08/07/2007 13:57







# Treatment Plant



06/04/2007 10:05









07/17/2007 01:03





07/17/2007 03:18



# Water Treatment



07/13/2007 07:30







# Air Treatment



10/31/2007 17:12





08/03/2007 13:11









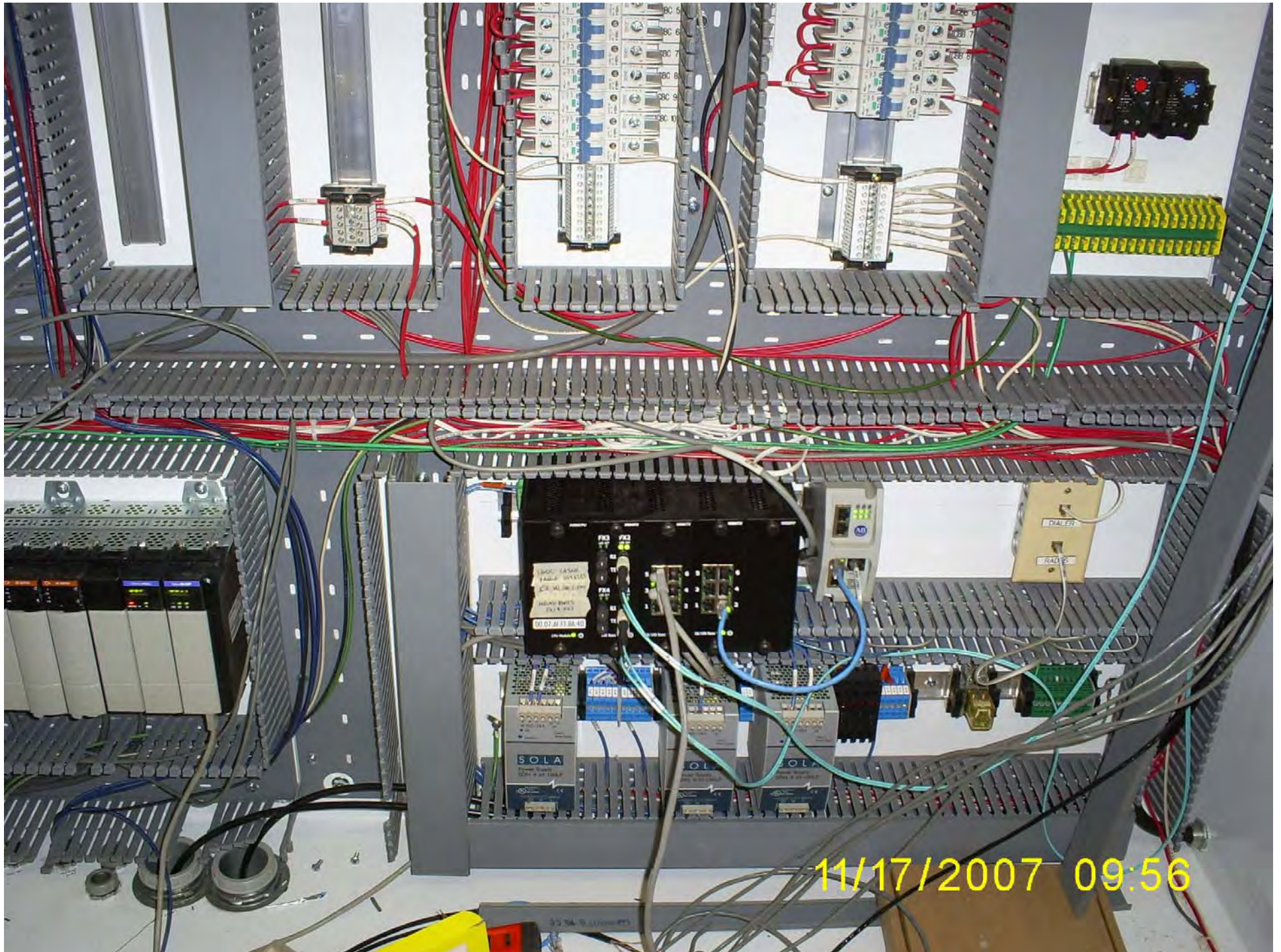




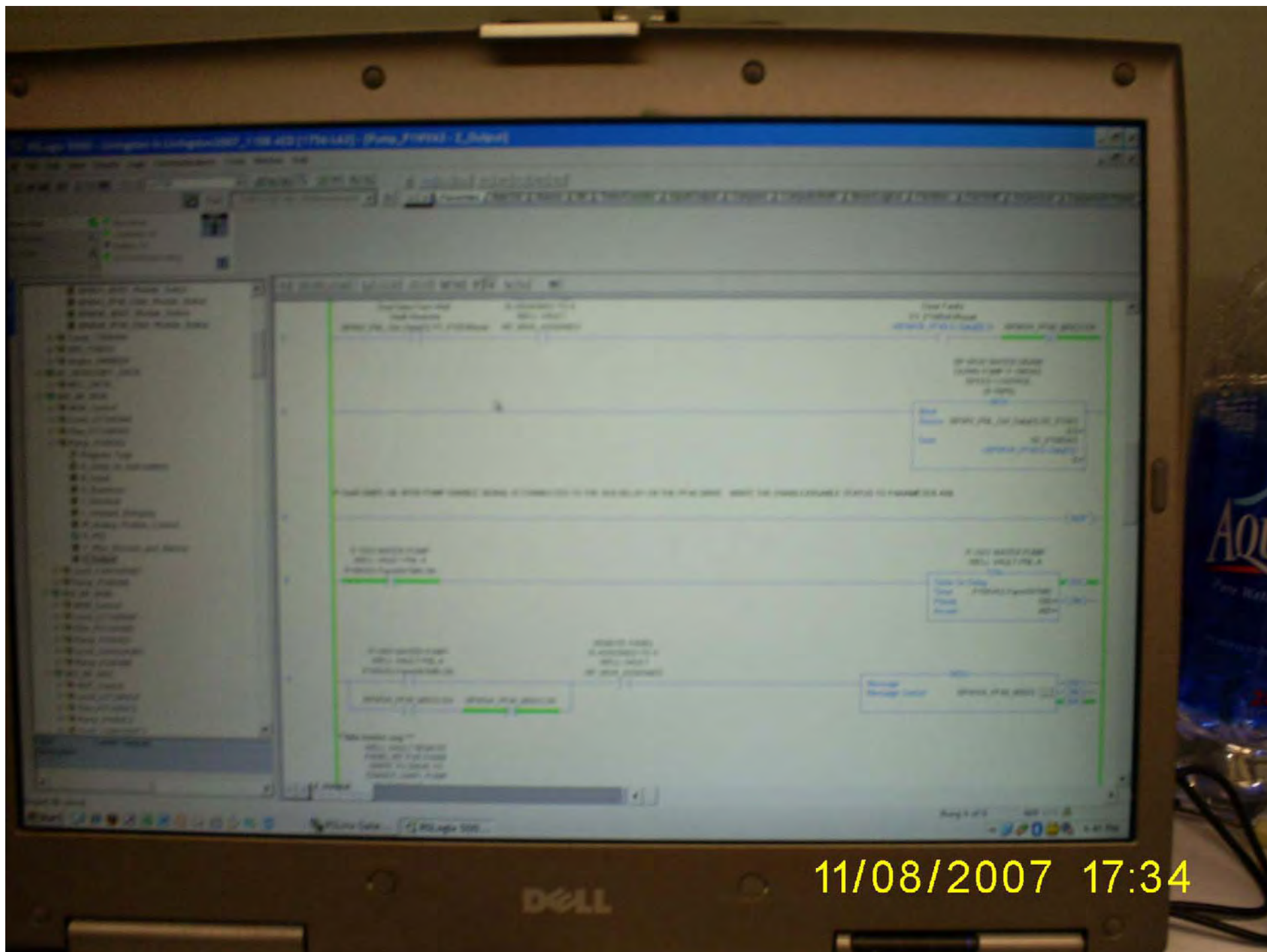


















# What's Next?

- **Finish testing components**
- **Fulfill discharge permitting requirements**
- **START RECOVERING PRODUCT AND BIOVENTING JANUARY 2008!**

10/16/2007 12:10



# **Volatile Organic Solvent Remediation Pilot Test**

- Installed and sampled new remediation wells
- Test treatment in laboratory
- Inject compound into the ground to breakdown solvents at the source

















ELECTRIC SHOP  
SOURCE AREA

NEW WATER TREATMENT BUILDING

MUW WELLS

30" JACK-N-BORE CASING

PARK STREET

UTILIDOR

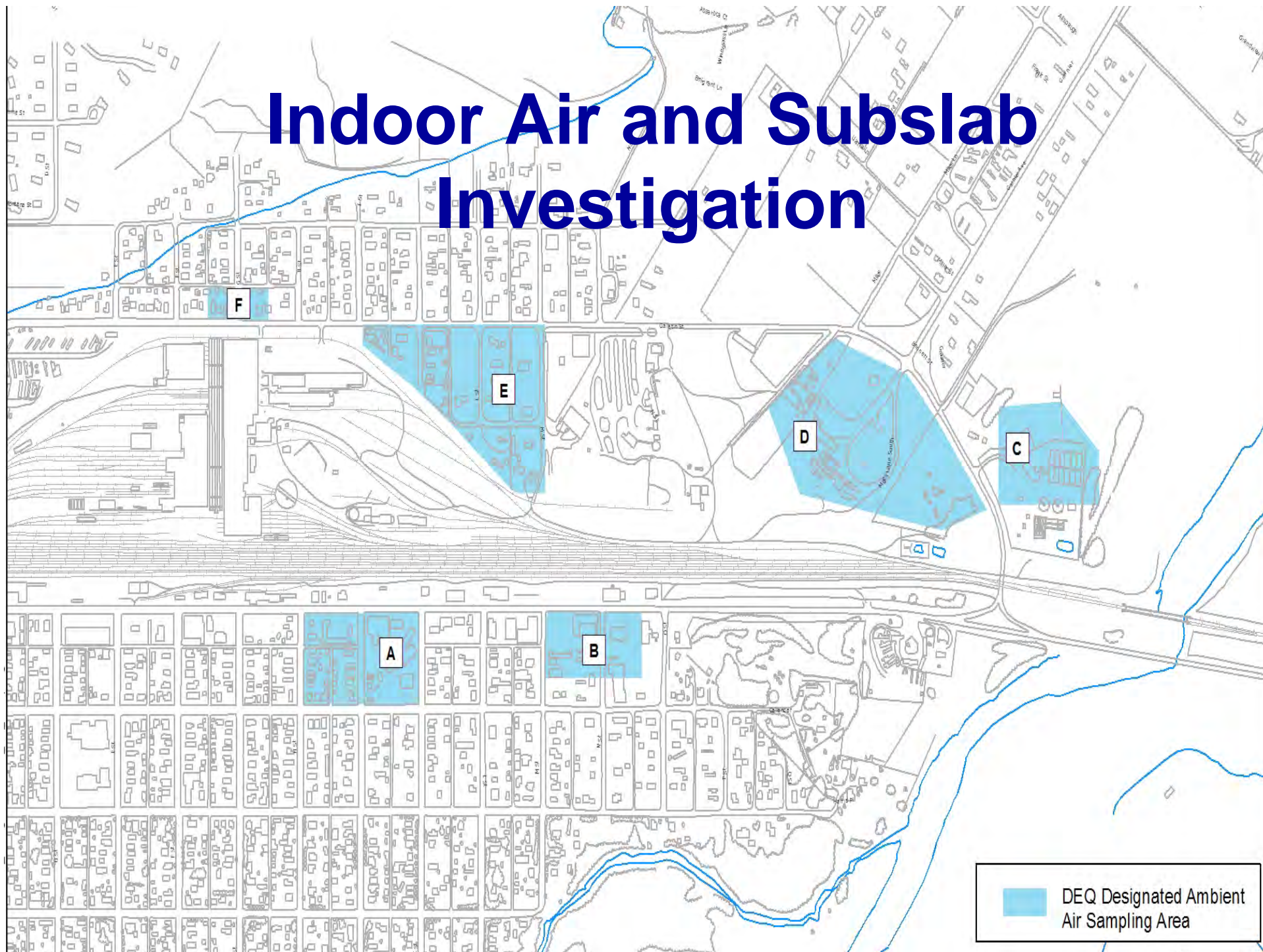


# Vapor Intrusion Investigation and Mitigation

- Indoor Air and Subslab Investigation
- Soil Gas Sampling
- Mitigation



# Indoor Air and Subslab Investigation







**Beneath Unfinished Basements**





**Beneath Concrete Floors**

04/03/2007 18:29





04/06/2007 09:31

**Beneath Finished Basements**



# Indoor Air

04/03/2007





# Upwind Ambient Air



04/03/2007 09:09













04/02/2007 11:11





04/02/2007 14:52

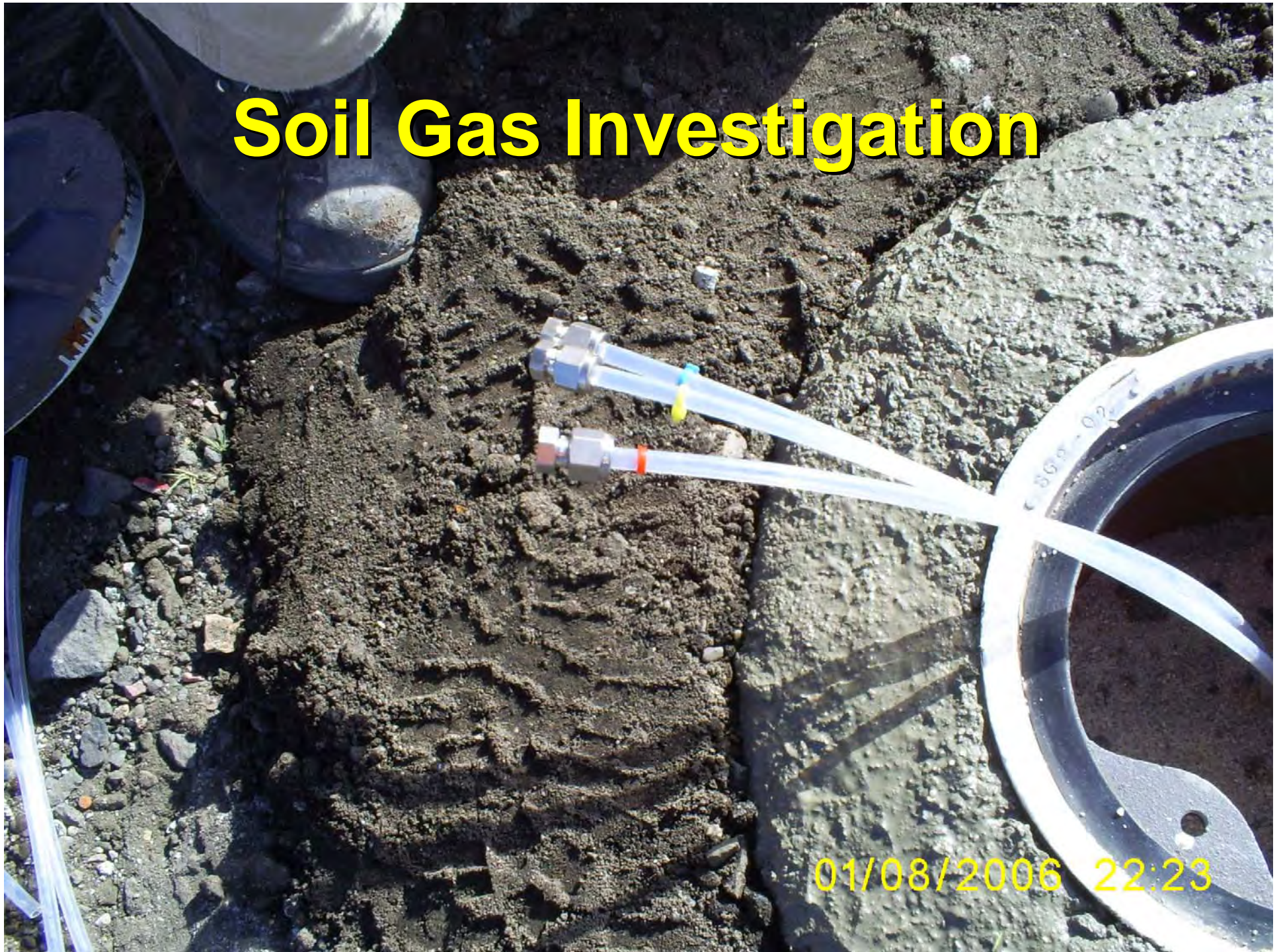




04/02/2007 17:37



# Soil Gas Investigation



01/08/2006 22:23



# More Holes in the Ground



















05/15/2007 11:57





04/21/2007 10:26





05/03/2007 14:31

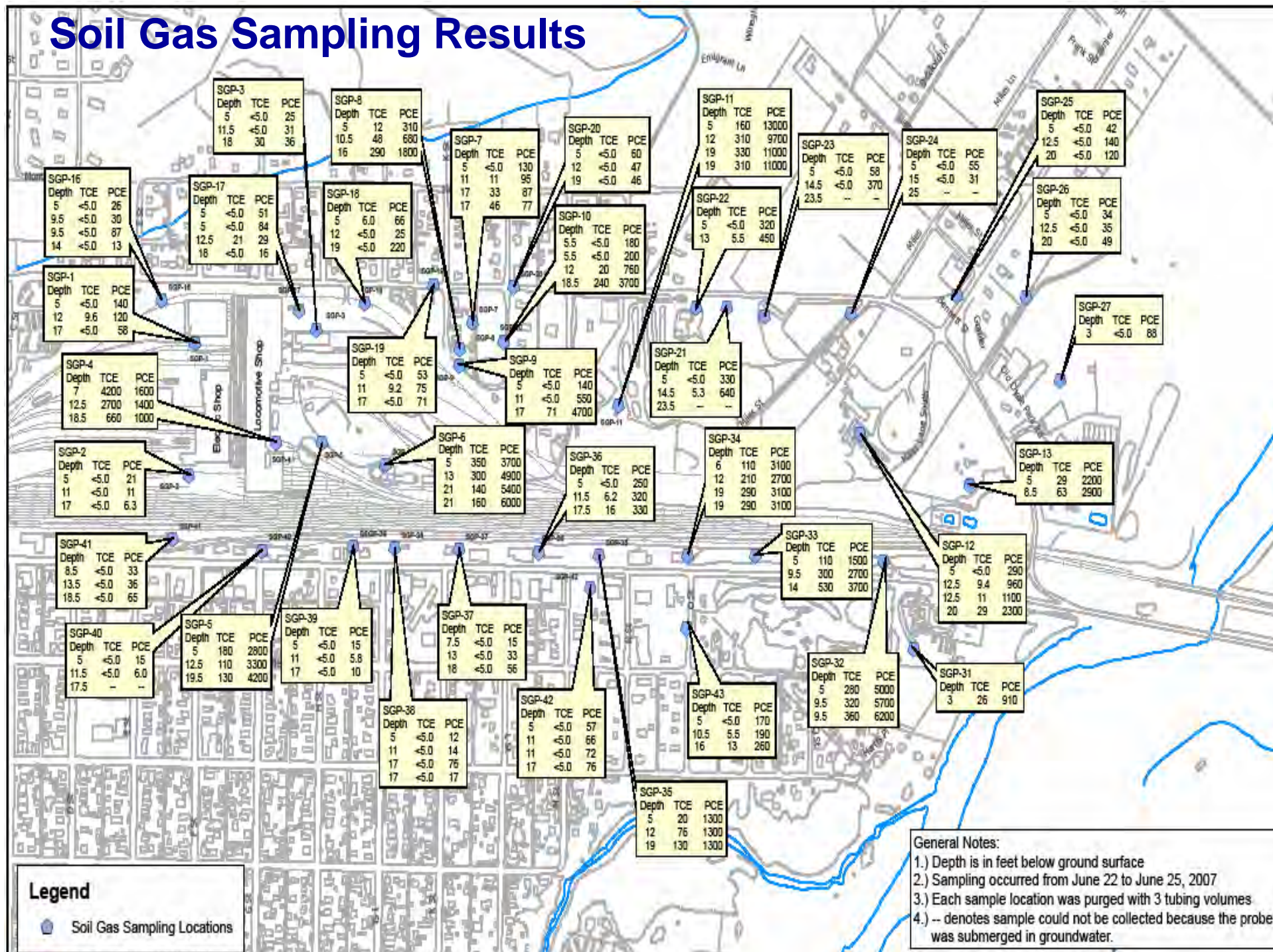




01/04/2006 01:44



# Soil Gas Sampling Results





# Mitigation

04/17/2007 1













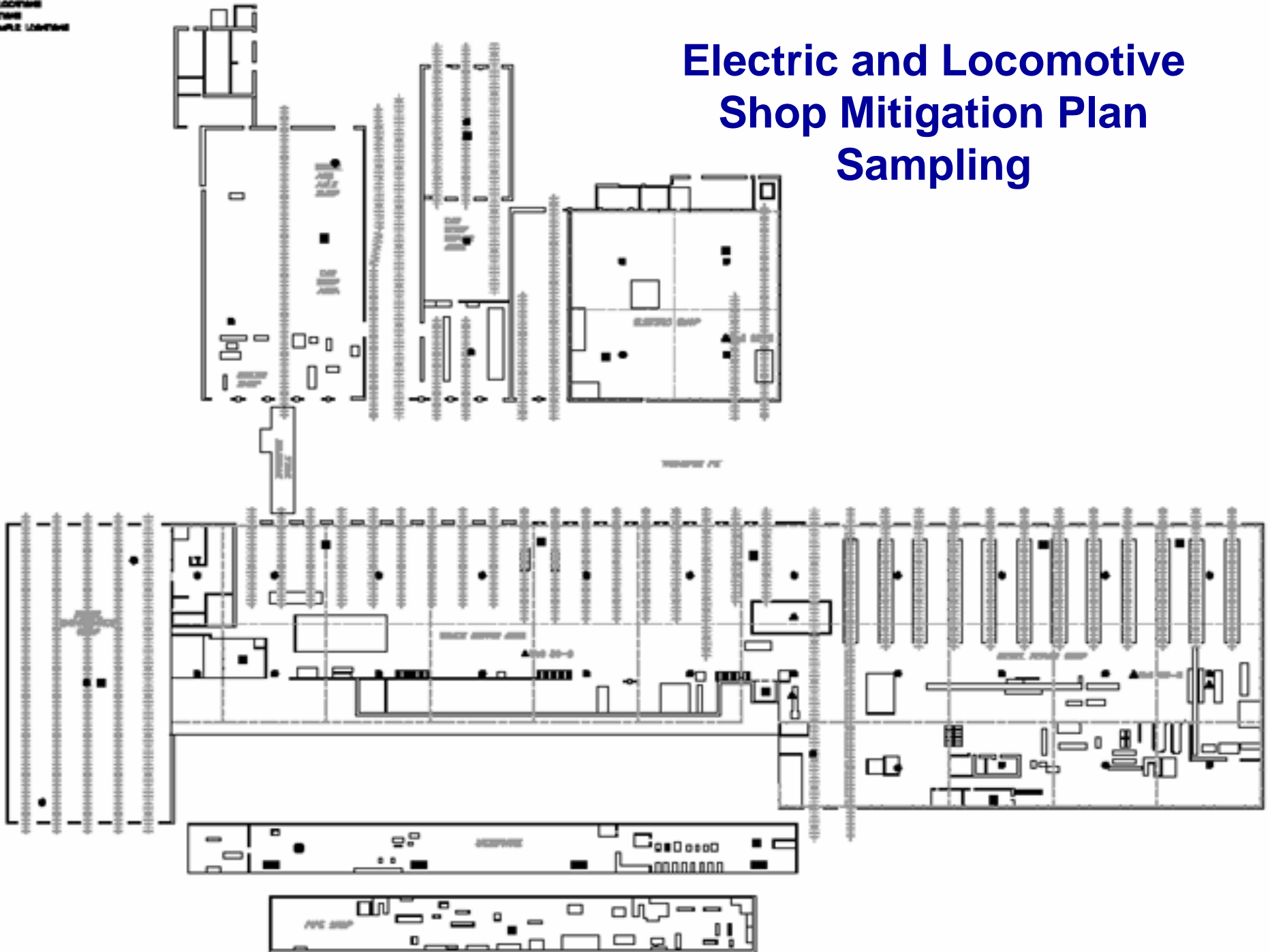


04/19/2007 16:04



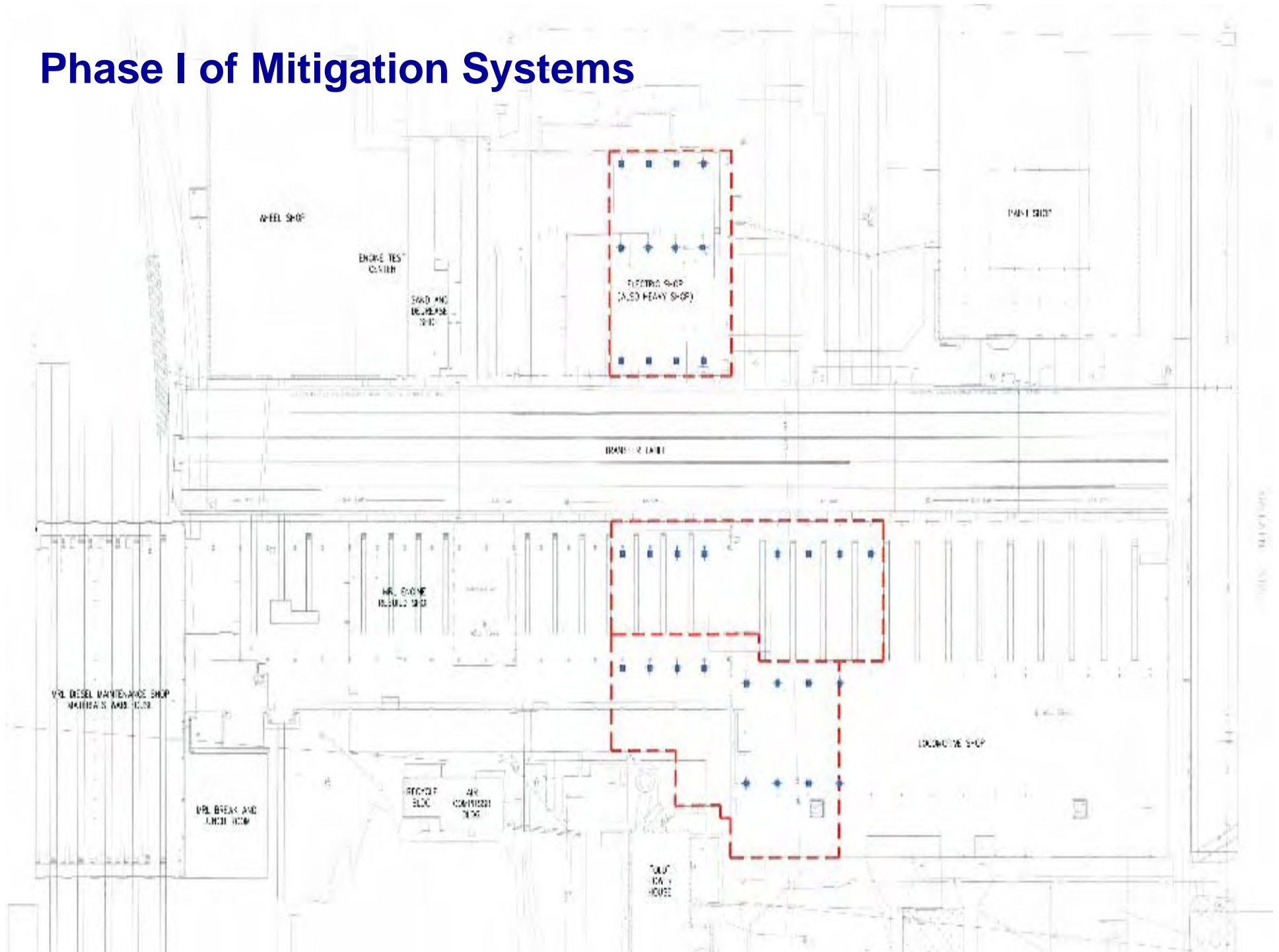
ASH  
RUE LOCOMOTIVE  
LOCOMOTIVE  
+ BUS/PLZ LOCOMOTIVE

# Electric and Locomotive Shop Mitigation Plan Sampling





# Phase I of Mitigation Systems





# What's Next?



## More Investigation



# More Mitigation

- Start installing systems in the Electric Shop and the Locomotive Shop
- System testing in additional rail yard buildings
- Install system in one residence



# Other Upcoming Activities

- Sample and cleanup surface soil in rail yard
- Investigate bedrock aquifer and determine the need for cleanup
- C&P Packing investigation and cleanup
- Determine full extent of dissolved petroleum plume and the need for cleanup
- Compile data from past actions and conduct additional sampling and cleanup



**Questions?**



# **Information**

## **Project Manager:**

**Aimee Reynolds – 406-841-5065 or 800-246-8198**

## **PCEC Contacts:**

**Jim Barrett, PCEC – 406-222-0723 or 866-829-2059**

**Brian Blicher, RTI – 406-585-8005**

## **Website:**

**<http://deq.mt.gov/StateSuperfund/BNLivingston.asp>**

## **Library Repository**